

CLAIMS

What is claimed is:

1. A fiber-based product comprising hydrocolloid and a cellulose portion having at least some of the hydrocolloid converted to carboxymethyl hydrocolloid and at least some of the cellulose converted to carboxymethyl cellulose.
2. The fiber-based product of Claim 1 wherein the hydrocolloid and the cellulose portion are obtained by simultaneous solubilization of fiber by alkali extraction and carboxymethylation with a carboxymethylating agent.
3. The fiber-based product of Claim 2 further comprising carboxymethylated starch and carboxymethylated hydrocolloid-cellulose complexes.
4. The fiber-based product of Claim 1 wherein the hydrocolloid is selected from the group consisting of hemicellulose, gum arabic, xanthan gum, gum karaya, tragacanth, sodium alginates, carageenan, Guar gum, Locus bean gum, tara, pectins, gellan and combinations thereof.
5. The fiber-based product of Claim 1 wherein the hydrocolloid is derived from fiber is selected from the group consisting of spent flake fiber, corn hull fiber and crude fiber.
6. The fiber-based product of Claim 1 wherein the hydrocolloid is purified hemicellulose of cellulose derived from corn.

7. The fiber-based product of Claim 1 wherein the amount of the hydrocolloid is from about 5% to about 80%, by weight of solids, and the amount of the cellulose portion is from and about 20% to about 70%, by weight of solids.
8. The fiber-based product of Claim 1 wherein the carboxymethylating agent is monochloroacetic acid or salts of monochloroacetic acid.
9. The fiber-based product of Claim 1 in dry form or liquid form.
10. An adhesive comprising the fiber-based product of Claim 1.
11. The adhesive of Claim 10 comprising from about 15% to about 40% starch, about 0.1% to about 10% of the fiber-based product, sufficient alkali to obtain a pH of about 10 to about 14 and water.
12. The adhesive of Claim 11 further comprising ingredients selected from the group consisting of up to about 2% boron containing compound, about 0.1% to about 10% polyvinyl alcohol, up to about 5% waterproofing or water resistant resins, up to about 5% biocides and up to about 5% performance enhancing compounds.
13. The adhesive of Claim 10 having no boron containing compound.
14. The adhesive of Claim 10 wherein the hydrocolloid is selected from the group consisting of hemicellulose, gum arabic, xanthan gum, gum karaya, tragacanth, sodium alginates, carageenan, Guar gum, Locus bean gum, tara, pectins, gellan and combinations thereof.
15. The adhesive of Claim 10 wherein the starch is selected from the group consisting of corn, wheat, barley, tapioca, rice, potato, high amylose corn

starch, waxy corn starch, acid thinned starch, hypochlorite-oxidized starch, etherified starch, esterified starch and cross-bonded starch.

16. The adhesive of Claim 10 further comprising carboxymethylated starch and carboxymethylated hydrocolloid-cellulose complexes.
17. The adhesive of Claim 10 in the form of a corrugating adhesive or a laminating adhesive.
18. A fiber-based product comprising hydrocolloid and a cellulose portion wherein the hydrocolloid and the cellulose portion are obtained by simultaneous solubilization of fiber by alkali extraction and carboxymethylation with a carboxymethylating agent during which at least some of the hydrocolloid is converted to carboxymethylated hydrocolloid, at least some of the cellulose is converted to carboxymethyl cellulose and carboxymethylated starch and carboxymethylated hydrocolloid-cellulose complexes are formed.
19. A method of making a corrugated board comprising joining by bonding a corrugated board to at least one liner using the adhesive of Claim 10.
20. The corrugated board made by the method of Claim 19.
21. A process for making a fiber-based product comprising the steps of combining at least about 20% to about 70% fiber, about 10% to about 70% alkali, about 10% and about 70% carboxymethylating agent in a means for mixing at a temperature of about 15°C to about 95°C and mixing the contents at high shear wherein at least hydrocolloid and cellulose are extracted from the fiber and some or all of the extracted hydrocolloid and cellulose are carboxymethylated.

22. The process of Claim 21 wherein starch and hydrocolloid-cellulose complexes are extracted from the fiber and some or all of the extracted starch and hydrocolloid-cellulose complexes are carboxymethylated.
23. The process of Claim 21 wherein the moisture content during the mixing is from about 10% to about 60%.
24. The process of Claim 23 wherein the mixing is in a highly fluidized state.
25. The process of Claim 21 wherein the carboxymethylating agent is monochloroacetic acid or salts of monochloroacetic acid.
26. The process of Claim 21 wherein the hydrocolloid is selected from the group consisting of hemicellulose, gum arabic, xanthan gum, gum karaya, tragacanth, sodium alginates, carageenan, Guar gum, Locus bean gum, tara, pectins, gellan and combinations thereof.
27. The process of Claim 21 wherein the fiber is selected from the group consisting of spent flake fiber, corn hull fiber and crude fiber.
28. A process for making an adhesive comprising the steps of admixing at least fiber, sufficient alkali to attain a pH from about 10 to about 14, carboxymethylating agent, starch, and water in a means for mixing and mixing for about 5 minutes to about 60 minutes at high shear wherein at least hydrocolloid and cellulose are extracted from the fiber and some or all of the extracted hydrocolloid and cellulose are carboxymethylated.
29. The process of Claim 28 wherein the starch is cooked.

30. The process of Claim 28 comprising the additional step of adding other components selected from the group consisting of polyvinyl alcohol, boron containing compounds, waterproofing resins, water resistant resins, biocides and performance enhancing compounds to the means for mixing prior to mixing.
31. The process of Claim 28 wherein the carboxymethylating agent is monochloroacetic acid or salts of monochloroacetic acid.
32. The process of Claim 28 wherein the hydrocolloid is selected from the group consisting of hemicellulose, gum arabic, xanthan gum, gum karaya, tragacanth, sodium alginates, carageenan, Guar gum, Locus bean gum, tara, pectins, gellan and combinations thereof.
33. The process of Claim 28 wherein the fiber is selected from the group consisting of spent flake fiber, corn hull fiber and crude fiber